DPM 2550

SODIUM HYPOPHOSPHITE, MONOHYDRATE

ELECTROLESS NICKEL GRADE

$NaH_2PO_2 \cdot H_2O$

NOMENCLATURE Sodium Hypophosphite, Monohydrate

GRADE Electroless Nickel

MOLECULAR WEIGHT 105.99

DESCRIPTION Sodium hypophosphite, monohydrate is a clean, white, free-flowing, crystalline material. Decomposition from heat produces phosphine, a toxic flammable gas. Do not expose to temperatures above 200°F. Keep away from open flames. Contact with flames or severe heat may cause explosion.

COMPOSITION

Sodium hypophosphite, monohydrate ($NaH_2PO_2 \cdot H_2O$):	101% minimum—106% maximum
Arsenic (As):	1 ppm maximum
Iron (Fe):	10 ppm maximum
Heavy metals (as Pb):	5 ppm maximum
Lead (Pb):	1 ppm maximum

TYPICAL PROPERTIES

pH (50% solution): 5.8
Sieving: Through 10 mesh 100%
Bulk Density (pounds per cubic foot): 63
Solubility (water): Clear solution

CONTAINERS ~~100- and~~ 325-pound net weight Fiber Drums

USES

Chemical: Reducing agent or antioxidant.
Metal Finishing: Electroless plating solutions and electroplating baths.
Plastics: Electroless plating of plastics.

Stauffer CHEMICALS
STAUFFER CHEMICAL COMPANY
INDUSTRIAL CHEMICAL DIVISION
Westport, Connecticut 06880

Product Safety Information

SODIUM HYPOPHOSPHITE

I. Physical and Chemical Properties

Formula: $NaH_2PO_2 \cdot H_2O$

Molecular Weight: 106

Physical State: Crystalline Solid (70°F-14.7 psig)

Melting Point (°F): decomposes violently

Flash Point (°F): >300 (PH_3)

Bulk Density of material: 63 lb/ft.^{3}

Color: white

Odor: none

Water Miscibility:

Soluble: 50% at 25°C
70% at 60°C

pH 50% Solution: 5.8 ± .7

II. Chemical Reactivity

Strong reducing agent, slow to react at room temperature in many cases. Reduces aqueous cupric ions to cuprous state and metallic copper, nickel salts to nickel.

III. Stability

Thermally unstable above 150°C, decomposing to form phosphine (toxic, inflammable gas) and sodium phosphates. The salt is a powerful explosive when heated with oxidizing agents such as chlorates, nitrates, etc. Decomposes in hot alkaline solutions to form phosphine and phosphates. Store in a cool place and keep containers closed when not in use.

IV. Fire Hazard

This product is not flammable; however, when subjected to temperatures in excess of 150°C decomposition produces flammable toxic phosphine.

V. Firefighting Techniques

If sodium hypophosphite is involved in a fire, water is suitable. Extreme caution should be excercised due to the possible presence of the decomposition product, phosphine. Fresh air breathing equipment should be used to protect fire fighters.

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VI. Health Hazards

No serious health hazards are associated from exposure to sodium hypophosphite. Acute systemic or local effects have not been recognized. No form of chronic toxicity has been recognized, either systemic or local. When heated to 150°C, sodium hypophosphite decomposes, evolving phosphine gas which is toxic and spontaneously flammable. Sodium hypophosphite is a strong reducing agent, and when mixed with strong oxidizing agents it forms a powerful explosive which can react violently when heated.

1. Ingestion

Sodium hypophosphite is excreted rapidly after ingestion. However, ingestion of large quantities might be accompanied by symptoms of gastrointestinal irritation such as nausea, vomiting and diarrhea.

2. Eye Effects

No specific action on eye tissues has been recognized. Nonspecific irritation may result if the crystals or solutions enter the eyes.

3. Dermal Effects

Dermal effects from skin contact with the material have not been reported.

4. Inhalation

Respiratory or systemic effects have not been recognized from inhalation of sodium hypophosphite. The major inhalation hazard would be from phosphine resulting from thermal decomposition.

5. Threshold Limit Value

No threshold limit value for sodium hypophosphite has been established by the American Conference of Governmental Industrial Hygienists.

6. Warning Properties

No warning properties are associated with sodium hypophosphite. However, a garlic-like odor indicates that phosphine is being produced.

VII. First Aid

First aid should be given immediately. Prompt treatment may greatly decrease the severity of the effect. In case of injury, the patient should be referred to a physician.

1. Ingestion

Give large amounts of water or warm salty water (2 tablespoons of table salt to a pint of water) to induce vomiting. If this measure is unsuccessful, vomiting may be induced by tickling the back of the patient's throat with a finger. Vomiting should be encouraged until the vomitus is clear. Obtain medical attention if abdominal discomfort persists.

2. Eye Contact

Immediately flush the eyes with large quantities of running water for a minimum of 15 minutes. Hold the eyelids apart during the irrigation to ensure flushing of the entire surface of the eye and lids with water. Do not attempt to neutralize with chemical agents. Obtain medical attention if irritation persists. Oils or ointments should not be used unless directed by a physician.

3. Skin Contact

Immediately flush affected areas with large amounts of water. Do not attempt to neutralize with chemical agents. Obtain medical attention if irritation persists.

4. Inhalation

Remove from contaminated atmosphere. If symptoms of respiratory discomfort persist, see a physician.

VIII. Precautions for Normal Use

A minor spill is defined as a small quantity which can be handled routinely considering the physical and hazardous properties of the product as well as the location of the spill.

Spills of this product can be swept up or washed away with water. This product is soluble.

Spills which are not considered to be minor, which are considered to be an emergency, must be handled according to a predetermined plan. For assistance in developing such a plan, contact Stauffer's Technical Service Department.

IX. Recommended Safety Equipment

Chemical goggles, rubber gloves, contained breathing apparatus for use when product decomposes.

X. Corrosivity to Materials of Construction

This product does not appear to aggressively attack metals. Mild steel is recommended at 80°C and below.

XI. Storage Requirements

Store in dry area. Keep away from flammable products.

XII. Disposal of Unused Material

For assistance in disposing of unused material contact Stauffer's Technical Service Department.

XIII. Disposal of Container

Rinse with water before disposing of container. Do not incinerate unless the container has been thoroughly flushed with water.

XIV. References

Stauffer Data Sheet.

Phosphorous and It's Compounds, by Van Wazer - Vol. 1

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